Delaware River Basin Commission
DELAWARE · NEW JERSEY
PENNSYLVANIA · NEW YORK
UNITED STATES OF AMERICA

Polychlorinated Biphenyls (PCBs) in the Delaware Estuary

Stage One PCB TMDLs Established

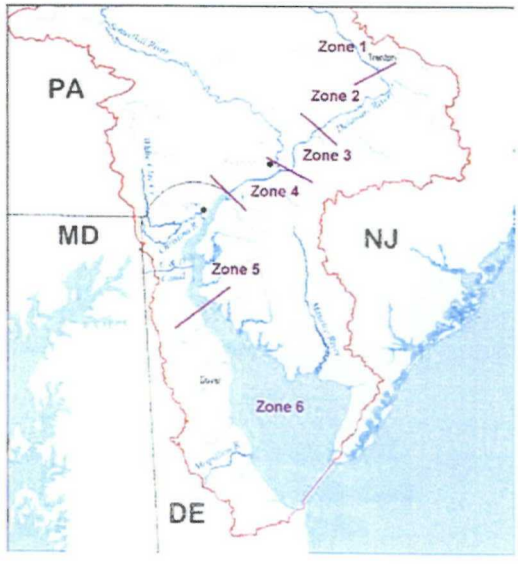
On behalf of the states of New Jersey, Pennsylvania, and Delaware, and based on work conducted by the Delaware River Basin Commission (DRBC), the U.S. Environmental Protection Agency (EPA) on December 15, 2003, established total maximum daily loads (TMDLs) for PCBs in the Delaware River Estuary under a court-mandated schedule resulting from a lawsuit against the federal government.

These efforts are part of an ongoing program designed to protect human health from the effects of eating PCB-contaminated fish now found in the estuary.

"The Delaware River is the cleanest it's been in decades," DRBC Executive Director Carol R. Collier noted. "But the presence of PCBs remains a problem. States bordering the river have issued fish consumption advisories because of elevated PCB levels in fish tissue. The goal is to reduce the level of this toxic substance to a point where the standards are met and the advisories are no longer necessary."

The EPA has classified PCBs as a probable human carcinogen. The United States banned the manufacture and general use (with a few exceptions) of PCBs in the late 1970s, but not before 1.5 billion pounds of the substance was produced. PCBs were used as coolants and lubricants in transformers, capacitors, and other electrical equipment because they don't burn easily and are good insulators. The chemical stability of PCBs, which encouraged their use in hundreds of industrial and commercial applications, also allows them to persist in the environment. PCBs enter fish and other wildlife through absorption or ingestion, and accumulate in their tissues at levels many times higher than in the surrounding water and at levels unsuitable for human consumption.

There are numerous sources of PCBs in the Delaware Estuary. They include contaminated sites, non-point sources, industrial and municipal point source discharges, the mainstem Delaware River above Trenton, tributaries to the Delaware both above and below Trenton, the atmosphere, combined sewer overflows (CSOs), and the Atlantic Ocean.



The four TMDLS address different water quality zones (Zones 2-5) in the 85-mile tidal reach of the Delaware River from Trenton, N.J. downstream to the head of the Delaware Bay, near Liston Point, Del. The TMDLs also include tidal portions of the tributaries in this covered area.

A TMDL is essentially a "pollution budget." It sets the maximum amount of a specific pollutant that a water body can receive without violating applicable water quality standards. It then allocates that amount among all

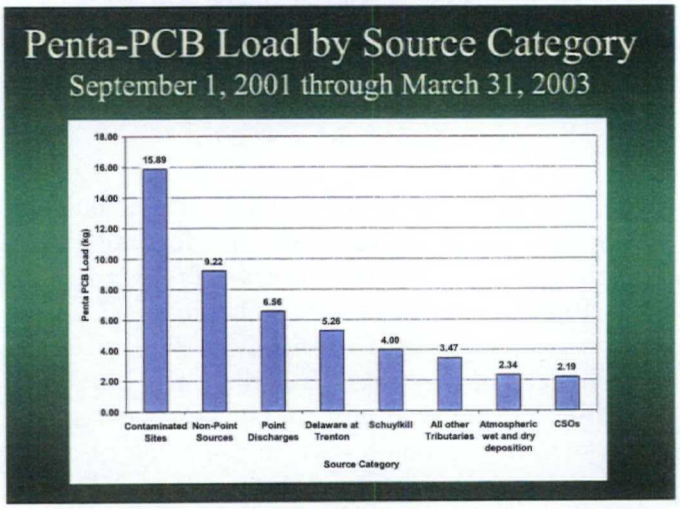
(over)

sources in the watershed – both point (end-of-pipe) and non-point – which must then reduce loads to the allocated levels in order to achieve and maintain the standards.

Each TMDL must provide for the achievement of the applicable water quality standard within the zone and also must ensure that water quality in downstream zones is adequately protected. The TMDLs will be incorporated by Pennsylvania, New Jersey, and Delaware into their current water quality management plans.

In the spring of 2000, the states and EPA asked the DRBC to take the lead in developing the technical basis for the TMDLs, an extraordinarily complex task that has relied on scientific investigations, data collection efforts, and water quality modeling. DRBC staff worked closely with the commission's Toxics Advisory Committee (TAC), comprised of representatives from the states, the EPA, municipal and industrial dischargers, academia, agriculture, public health, environmental organizations, and fish and wildlife interests. Assisting commission staff and the TAC was an expert panel of scientists from EPA, Rutgers University, Tufts University, University of Maryland, Mississippi State University, and Interface Inc.

A staged approach to establishing the PCB TMDLs, first discussed in Spring 2002, is being used. DRBC staff developed and calibrated a water quality model for one particular type of PCB (known as "Penta-PCBs") that represents about one-quarter of the total PCBs present in the estuary. This, in turn, was extrapolated for total PCBs in order to develop the Stage One (December 2003) TMDLs. DRBC, EPA, and the estuary states will continue to further refine the TMDLs through more detailed monitoring to enhance the Stage One model. The Stage Two TMDLs are scheduled to be established in December 2006.



"The reduction in PCB levels will not occur overnight and achieving the water quality standards will take decades," Collier said. "Point source dischargers will be required to develop and implement PCB minimization plans, and non-point pollution reduction strategies will need to be crafted. Fortunately, some large dischargers along the river already are conducting studies to track down PCBs on a voluntary basis."

"Developing the scientific basis and actually reducing the levels of PCBs is an extremely complex undertaking and I am pleased to report that the overall efforts by the DRBC and its governmental partners to open up the process for greater participation by all interested stakeholders has been well-received," Collier added.

The commission's TAC has formed the core of stakeholder involvement in the process. The DRBC established a new TMDL Implementation Advisory Committee (IAC) in 2003, which has been asked to develop creative and cost-effective strategies for reducing loadings of PCBs and achieving the TMDLs for PCBs in the estuary. Members include the three estuary states, the major municipal dischargers and two of the smaller ones, industrial dischargers, and fishery, wildlife, and environmental organizations.

Visit the DRBC web site at www.drbc.net for more information.